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PSYCHE

Vol. 62 December, 1955 No. 4

A TERRESTRIAL DAMSELFLY NYMPH (MEGAPODAGRIONIDAE) FROM NEW CALEDONIA[1]

BY RUTH LIPPITT WILLEY

Biological Laboratories, Harvard University

Recently, a damselfly nymph of the family Megapodagrionidae was found in the berlese funnel material of soil and leaf litter sent to the Museum of Comparative Zoology from Ciu, New Caledonia, by Dr. E. O. Wilson. It is a rather young stage and cannot be placed definitely to genus. However, on the basis of the labium and the horizontal type of caudal gill, it seems reasonable to classify the nymph as one of the four known species of Megapodagrionidae from New Caledonia: *Argiolestes uniseries* Ris, *A. sarasini* Ris, *A. ochraceous* Montrouzier, or *Trineuragrion percostale* Ris. Both Dr. Fraser and Dr. Lieftinck have kindly confirmed this supposition. Lieftinck writes that his extensive, unpublished notes and sketches of Megapodagrionid nymphs from Malaysia and New Guinea show a very close relationship with this New Caledonian form.

The habitat in which the nymph was found is extremely unusual for an Odonate nymph, and is a strong factor in favor of treating this form as normally terrestrial. Dr. Wilson writes that "all soil and leaf litter samples were collected in dry to moderately moist (but never wet) spots on the forest floor, never less than 200 feet from the river and 75-100 feet above it on a fairly steep slope. There were no lesser streams or other standing bodies of water in the part of the forest I worked. Most of the samples were taken in a level area with numerous small rocks and moist leaf litter several inches deep". The nymph is too young to have been wandering away from the river in search of a place to transform to the adult. The morphology would suggest either a burrowing or terrestrial habitat. However, in consequence of the locality in which it was collected, it seems reasonable to consider it terrestrial, in this being similar to the specialized Hawaiian species of *Megalagrion* McLachlan.

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[1] Published with the aid of a grant from the Museum of Comparative Zoology at Harvard College. This study was supported by the Alice Freeman Palmer Fellowship, Wellesley College, 1954-55.

The nymph had been preserved in alcohol, and as a result, the tissues were very poorly fixed. It was post-fixed in Carnoy's fixative in an attempt to preserve some of the few remaining internal structures.

Total length 11.2 mm., body length (minus caudal gills) 8.7 mm., abdomen length 4.5 mm. Head broad, median length 1.6 mm., maximum width 2.6 mm., well covered with heavy setae (Pl. 13, fig. 3). Antennae 6-segmented. Scape and pedicel longest antennal segments; thickly covered with long setae. Relative lengths of antennal segments 12:12:5:5:4:6. Mentum of labium broad, almost square in outline (Pl. 13, fig. 1). Mental setae absent. Distal margin of the mentum minutely crenelate with short, thick setae between each projection. Small median cleft present. Just proximal to distal margin and located on each side of the cleft is a minute tooth similar to that found in Cora and Thaumatoneura. At each corner on the distal margin, near the base of the lateral lobes, is a tuft of 8 setae. Lateral lobe slender, with a long movable hook (Pl. 13, fig. 2). Of the 3 teeth, the center one is longest and sharpest. End tooth of left maxilla with 3 basal teeth (Pl. 13, fig. 4).

Incisor region of the mandibles with 5 teeth. Molar region separated by a membranous area from the rest of

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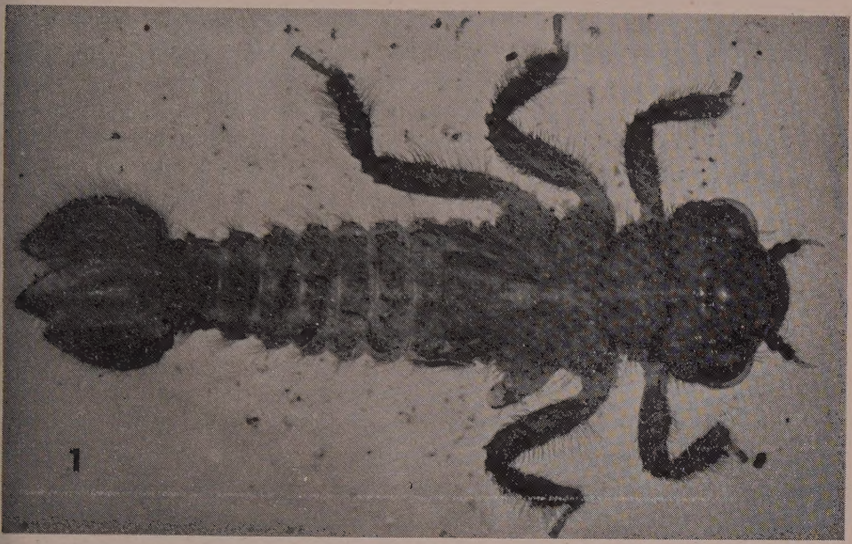
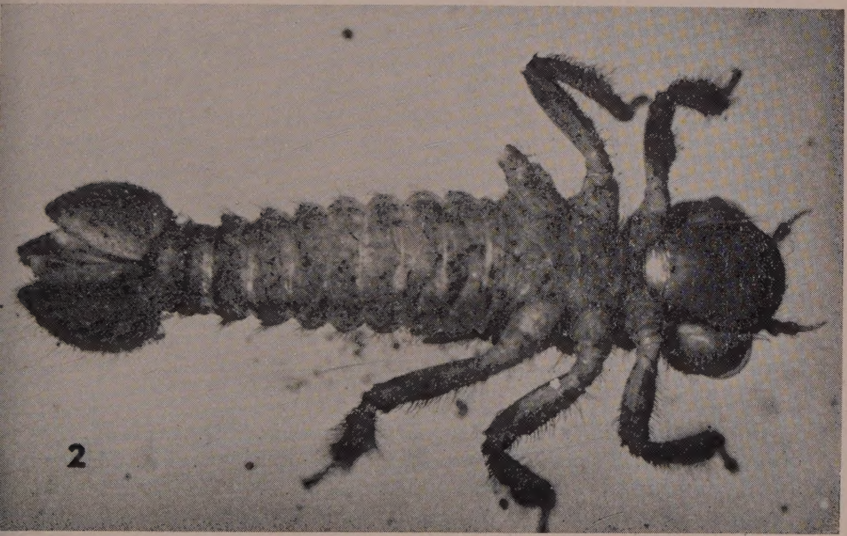
Explanation of Plate 12

Megapodagrionid nymph, Ciu, New Caledonia. Fig. 1, dorsal view. Fig. 2, ventral view. Magnification, (×9).





Willey — Megapodagrionid Nymph

the mandible. In the left mandible, the molars form a cutting edge parallel to that of the incisors, with a sharp tooth at each end and 5 small intermediate teeth (Pl. 13, fig. 6). In the right mandible, the molar region is reduced to a single,independent, sharp tooth; the first incisor has a small basal tooth (Pl. 13, fig. 5). A muscle can be seen attached to the molar region of the left mandible, indicating that the molars are probably capable of independent movement; exact information must await study of properly fixed material.

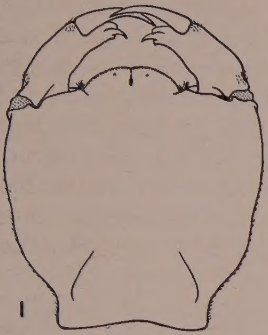
Mesothoracic wingpads extend to the posterior margin of 2nd abdominal segment, 1.8 mm. long. The nymph is too young and the fixation too poor to identify it by wing venation. It is interesting to note that the thoracic spiracles are not open or functional. Peritreme and trachea present, but lips sealed together, as found normally in aquatic forms. Legs short, densely covered with long, simple setae (Pl. 14, fig. 3). Femora compressed, incrassate; length of left prothoracic femur 1.1 mm., mesothoracic femur 1.9 mm., metothoracic femur 2.8 mm. Both femora and tibia are heavily ridged, and are, as a consequence, almost rectangular in cross-section. Tarsi slender, very short, each with a well developed pair of claws. Abdomen short and thick, round in cross-section, maximum width of 3rd segment 2.1 mm., covered with heavy setae. Proventriculus primitive, generalized, with 16 well-defined folds, 8 major (7-9 teeth) and 8 minor (5-6 teeth), plus 16 anterior, half-length folds (2-4 teeth) which alternate between the regular folds (Pl. 13, fig. 7).

Caudal gills one-jointed, of the saccular triquetroquadrate type (Pl. 14, figs. 1, 4). Median gill quadrangular, but somewhat flattened in the horizontal plane, 2.3 mm.

EXPLANATION OF PLATE 13

Megapodagrionid nymph, Ciu, New Caledonia. Fig. 1, dorsal view of labium. Fig. 2, detail of right lateral lobe of labium. Fig. 3, dorsal aspect of nymphal head. Fig. 4, right maxilla. Fig. 5, left mandible. Fig. 6, right mandible. Fig. 7, diagram of several dental folds of proventriculus to show generalized pattern.

Magnification. Figs. 1, 3 (×20). Figs. 2, 4-7 (×40).



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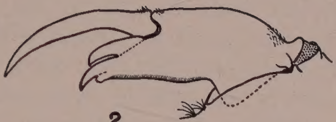

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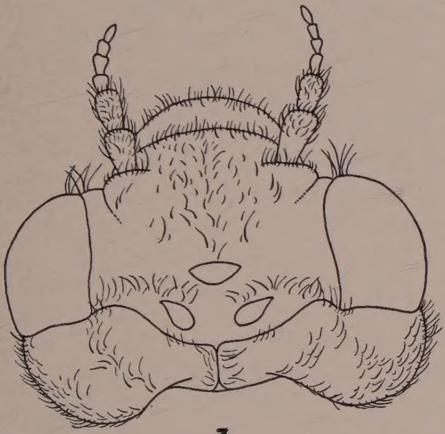

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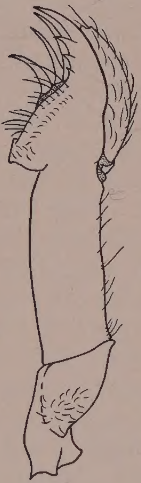

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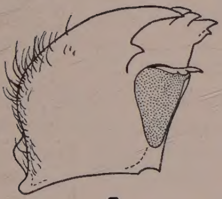

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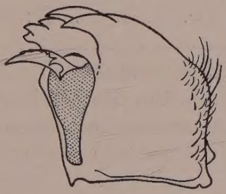

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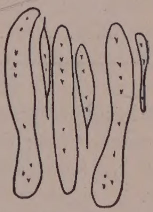

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WILLEY — MEGAPODAGRIONID NYMPH

long, maximum width 1.0 mm. Lateral gills similarly flattened, triquetral; left lateral gill 2.1 mm. long. Tillyard[2], when speculating upon the evolution of the horizontal lamellar type of gill in his Australian *Argiolestes*, postulated just such an intermediate form as this between the primitive saccoid gills and the specialized lamellar types. It seems reasonable to assume that this nymph represents one of the intergrade types leading to the specialized situation in the Australian species. The gills are attached to the abdomen by a remarkably narrow constriction, a very efficient breaking point. In cross-section can be seen the vertical internal laminae which are characteristic of the horizontal gill type (Pl. 14, fig. 2). The hypodermis and tracheae are heavily pigmented. The tracheae enter the gill as a single trunk, divide immediately into the two main trunks which then divide repeatedly throughout the length of the gill. Long slender setae densely cover the gill. They are held in unusually deep, cup-like sockets which keep the processes in an erect position.

It would be interesting to study the life-history of this species in view of the apparent shift in habit, and to compare it with closely related aquatic forms. When the nymph was received, it was heavily coated with debris caught among the long hairs. In this immature form, respiration must take place through the cuticle. The increased number of setae serves to maintain a cover of damp debris which keeps the cuticle moist, a necessity for gas exchange. Such a cover is also of advantage as protective coloration. Lieftinck (*in litt.*) feels that the hairiness of this nymph may be, however, a common

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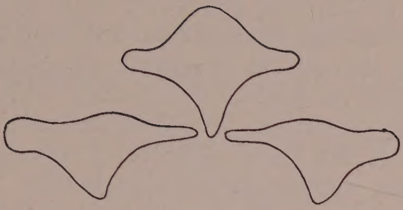
[2] 1917. On the morphology of the caudal gills of the larva of Zygopterid dragonflies. Proc. Linn. Soc. N. S. W., 42: 31-112, 606-632.

EXPLANATION OF PLATE 14

Megapodagrionid nymph, Ciu, New Caledonia. Fig. 1, outline diagram of cross-section through caudal gills to show relative shapes and positions. Fig. 2, reconstruction of cross-section through middle of left lateral gill. Fig. 3, right mesothoracic leg. Fig. 4, ventral view of left lateral gill. dbc, dorsal blood channel; dn, dorsal longitudinal nerve; il, vertical internal lamina; tr, tracheal trunk.

Magnification. Fig. 3 (×10). Figs. 1, 4 (×20). Fig. 2 (×67).



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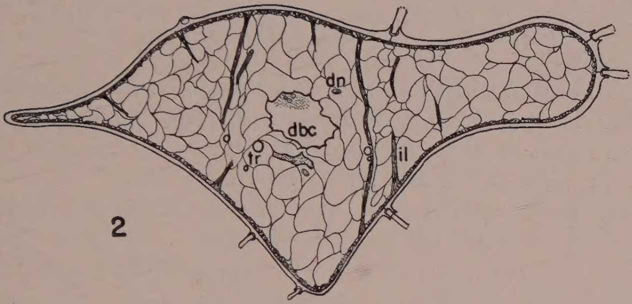

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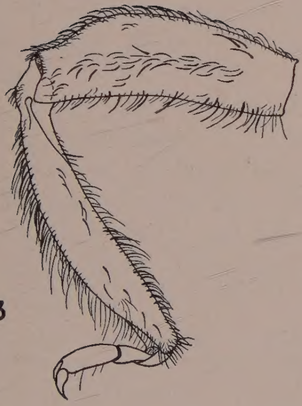

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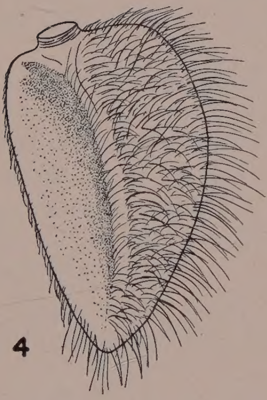

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WILLEY — MEGAPODAGRIONID NYMPH

characteristic within the genus, at least with his Malaysian and New Guinea specimens, and not necessarily an adaptation to a terrestrial environment. The short, strong legs, with well-developed tarsal claws, which are similar to a burrowing condition, would be useful for locomotion in the absence of the usual support of the aquatic medium. Fraser also has suggested (*in litt.*) that the ocelli are unusually large for such a young form; this also may be due to its unusual environment. Comparative study of the nymphs and adults of the New Caledonian *Argiolestes* will be necessary before the evolution of terrestrial modifications of this nymph can be understood.

I am indebted to Dr. F. C. Fraser and Dr. M. A. Lieftinck for their letters with suggestions on the taxonomic position and habit of this unusual nymph. I also wish to thank Dr. E. O. Wilson for his notes on its habitat.

INCISALIA SCUDDER[1], A HOLARCTIC GENUS (LEPIDOPTERA: LYCAENIDAE)[2]

By Nicholas W. Gillham

Harvard University

Recently I have compared specimens of *Ahlbergia frivaldszkyi* (Lederer), the generitype of *Ahlbergia,* and *Incisalia niphon* (Hübner), the generitype of *Incisalia.* The genitalia and external facies of these species indicate that they are congeneric, and examination of other species of *Incisalia* further supports this conclusion. I therefore propose the following synonymy for the genus *Incisalia*:

Incisalia Scudder

Incisalia Scudder, 1872, 4th Ann. Rept. Peabody Acad. Sci., 1871:31. Generitype: *Lycus niphon* Hübner, by original designation.

Thecla, div. auct., nec Fabricius, 1840, *in* Illiger, Magazin für Insektenkunde, 6:286 (generitype *Papilio betulae* Linnaeus, designation by Swainson, 1821, Zoological Illustrations, (1) 2, pl. 69), *part.*

Lycus Hübner, [1819], Verzeichniss bekannter Schmettlinge [!] (generitype *Papilio rubi* Linnaeus, designation by Scudder, 1875, Proc. Amer. Acad. Sci., Boston, 10:210), *part.*

Licus Hübner, [1819], Zuträge zur Sammlung exotischer Schmetterlinge, 2:7, no. 102 (generitype *Papilio rubi* Linnaeus, designation by Scudder, 1872, 4th Ann. Rept. Peabody Acad. Sci., 1871:52), *part.*

Satsuma Murray, *nec* Adams, 1874, Ent. Mon. Mag., 11:168. Generitype: *Lycaena ferrea* Butler (=*Thecla frivaldszkyi* Lederer), monobasic. **New Synonymy.**

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[1] Scudder is the author of this genus, not Minot; see dos Passos (1943).

[2] Published with a grant from the Museum of Comparative Zoology at Harvard College.

Ahlbergia Bryk, 1946, Ark. för Zool., 38A(3):50. Generitype: *Thecla frivaldszkyi* Lederer, by original designation. **New Synonymy.**

Generic Description Based on the Adults

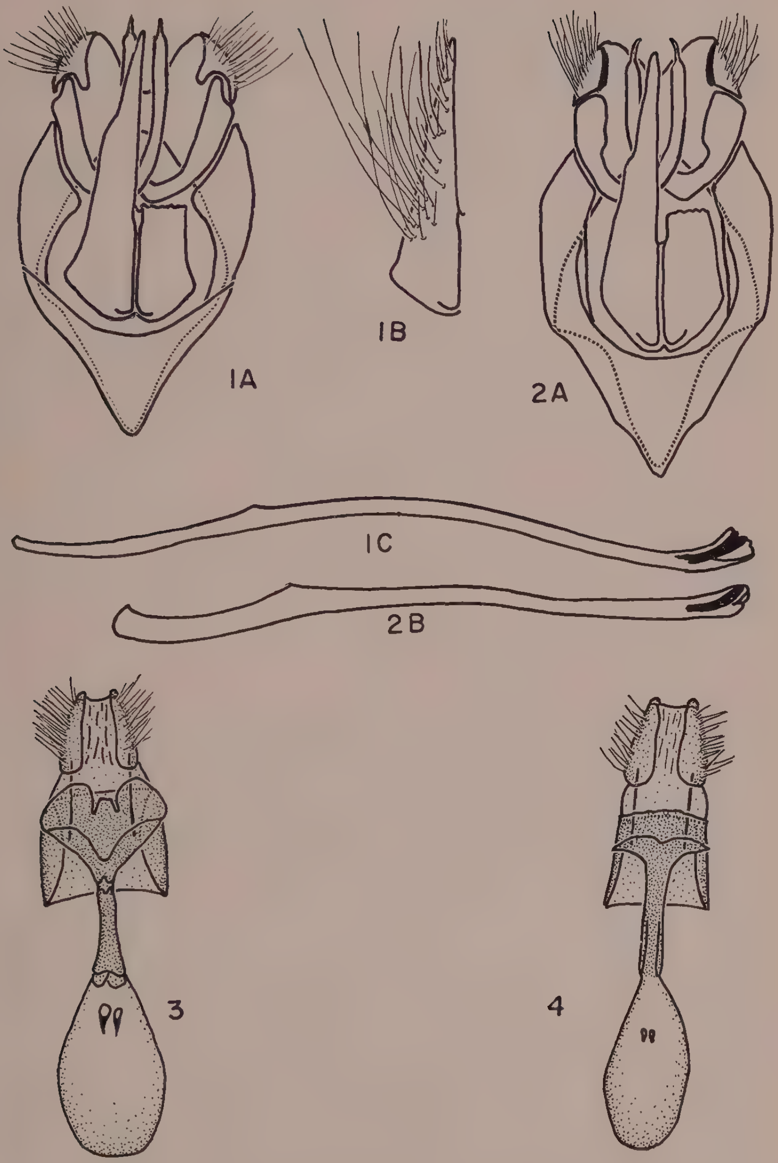
External facies. The ground color above is gray to orange brown in most of the Nearctic species. In the Palearctic species it is blue to iron gray with the exception of *chalybea pluto* Leech and *circe* Leech. In *chalybea pluto* the ground color is a deep black and in *circe* the distal area is dark while the basal area is dusted with bright metallic blue. The hindwings lack the "tails" characteristic of many genera and species of Theclinae, and usually have somewhat scalloped outer margins. The inner margins are often concave above the anal angles, and these are prolonged and bent downward at right angles. The ground color of the underside is a shade of brown, sometimes suffused with gray on the outer half of the hindwing. The eyes are hairy and large.

Male genitalia (figs. 1 and 2). Labides (paired, rounded, hairy, dorsal projections) projecting shortly, but deep dorsoventrally. Falces (heavily chitinized, paired, sharp, subdorsal structures which, with the paired labides, characterize the Lycaenidae) of fairly even width subterminally; tapering to a point terminally. Saccus short, thick, and without any pronounced angling. Aedeagus very long and slender.

Female genitalia (figs. 3 and 4). Ostium flaring into a

Explanation of Plate 15

Fig. 1. Male genitalia of *Incisalia niphon* (Hübner) from Waltham, Mass. (30×). A. Ventral view with aedeagus removed and hairs of harpes not shown. B. Inset of a harpe showing hairs. C. Lateral view of aedeagus. Fig. 2. Male genitalia of *Incisalia frivaldszkyi* (Lederer) from South Korea (30×). A. Ventral view with aedeagus removed and hairs of harpes not shown. B. Lateral view of aedeagus. Fig. 3. Female genitalia of *I. niphon* (Hübner) from Tyngsboro, Mass., ventral view (9.9×). Fig. 4. Female genitalia of *I. frivaldszkyi* (Lederer) from Okeanskaja, Ussuri, ventral view (9.9×). All specimens in the collection of the Musuem of Comparative Zoology, Cambridge.



Gillham — Incisalia

wide, lipped, transverse band caudally. The ventral lip partially covers the more dorsal band which is sometimes strongly folded along its caudal edge. Ductus bursae rather long, narrow, and even in width. It is sclerotized throughout most of its length. Bursa copulatrix elongate, and bearing two signa. Ovipositor lobes narrow and somewhat pointed terminally.

Life History

The life histories of most of the North American species are known, but I can find none recorded for the Palearctic species. Because of this I defer inclusion of life history notes in my generic description until this information becomes available. Descriptions of the early stages of the eastern North American species are available in Klots (1951), and further references may be found in Hy. Edwards (1889), Davenport and Dethier (1938), and Dethier (1946). The foodplants of the larvae are varied, including conifers (*Picea, Juniperus* etc.) and flowering plants (*Kalmia, Arctostaphylos, Vaccinium, Prunus* etc.).

Distribution

In North America this genus ranges from east to west coasts. It is found well north into Canada, whence it ranges south to Florida, Texas, and southern California. In Asia it is found from Siberia, the Amur basin, and Japan south through China to the Khasia Hills of Assam. It ranges westward to the Altai Mountains, and its Asiatic metropolis is central and western China, where the greatest number of species occur.

Synonymy

Prior to the beginning of this century, a large majority of the "hairstreaks" were assigned by most authors to the catchall genus *Thecla*, even though a number of other generic names were available. In many places, such as South America, this is still the case, and it is only in the last fifty years that some attempt has been made to break the hairstreaks up into more natural groupings. Hübner included *Incisalia niphon* (Hübner) in his genera *Lycus* and *Licus* with one or two unrelated species. Later authors either missed or disregarded this reference, and generally assigned the species of *Incisalia* to *Thecla*. In 1872 Scudder erected the genus *Incisalia* for *niphon* and its allies, while in 1874 Murray created the genus *Satsuma* for *Lycaena ferrea* Butler[3]. Leech was aware of Murray's genus, and towards the end of the 19th Century described several new species as belonging to it. In 1946 Bryk pointed out that *Satsuma* Murray, 1874, was a homonym of *Satsuma* Adams (Mollusca), 1868. He therefore proposed the name *Ahlbergia* to replace *Satsuma* Murray. My own studies show that *frivaldskyi* is congeneric with *niphon*. For this reason I am placing *Satsuma* and *Ahlbergia* in the synonymy of *Incisalia*, the senior name.

Synopsis of Species

The following synopsis is based on current American references for Nearctic species and on Seitz (1910) for Palearctic species. No attempt has been made to determine whether or not any of these should be synonymized.

Incisalia niphon (Hübner), [1819], Verzeichniss bekannter Schmettlinge [!], (5) :74. Type locality and sex not stated.

Incisalia irus (Godart), 1823, *in* Latreille, Encyclopedie Methodique, Histoire Naturelle Entomologie, etc., 9:674. Type locality: America (?), male.

Incisalia augustinus (Westwood), 1852, *in* Doubleday and Westwood, The Genera of Diurnal Lepidoptera, 2:486. Type locality: northern parts of North America.

Incisalia iroides (Boisduval), 1852, Ann. Soc. Ent. France, Series 2, 10:289. Type locality: California, sex not stated.

Incisalia eryphon (Boisduval), 1852, *ibid.*, p. 290. Type locality: California, sex not stated.

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[3] There is some disagreement on the specific distinctness of *ferrea* from *Incisalia frivaldszkyi* (Lederer). I have examined the genitalia of Japanese specimens referable to *ferrea* and Asiatic specimens referable to *frivaldszkyi* and can find no differences that would warrent keeping them separate as species. Therefore, I regard these names as concerning the same species.

Incisalia frivaldszkyi (Lederer), 1855, Ver. zool.-bot. Ver. Wien, 5:100. Type locality: Ust-Buchtarminsk, Altai Mtns., male.

Incisalia henrici (Grote & Robinson), 1867, Trans. Amer. Ent. Soc., 1:174. Type locality: Maine to Philadelphia, Pa., male and female.

Incisalia fotis (Strecker), 1877, Lepidoptera, Rhopaloceres & Heteroceres, indigenous & exotic, No. 14:129. Type locality: Arizona, sex not stated.

Incisalia mossii (Hy. Edwards), 1881, Papilio, 1:54. Type locality: Esquimalt, Vancouver Is., British Columbia, male.

Incisalia chalybea (Leech), 1890, Entomologist, 23:43. Type locality: Chang-Yang, Central China, male.

Incisalia pratti (Leech), 1890, *ibid.*, p. 44. Type locality: Ichang, China, male.

Incisalia leechii (de Nicéville), 1892, Bombay Nat. Hist. Soc., 7:335. Type locality: Khasia Hills, Assam, female.

Incisalia circe (Leech), 1893-94, Butterflies from China, Japan & Corea, 2:354. Type locality: Ta-chien-lu, China, male and female.

Incisalia nicévillei (Leech), 1893-94, *ibid.*, p. 355. Type locality: Chang-Yang, Central China, male and female.

Incisalia polios Cook & Watson, 1907, Can. Ent., 39:202. Type locality: Lakewood, New Jersey, males and females.

Incisalia hadros Cook & Watson, 1909, *ibid.*, 41:181. Type locality: unknown, perhaps Houston, Texas, male and female.

Incisalia lanoraieensis Sheppard, 1934, *ibid.*, 66:141. Type locality: Lanoraie, Quebec, male and females.

Incisalia doudoroffi dos Passos, 1940, *ibid.*, 72:168. Type locality: Big Sur, Monterey Co., California, males and females.

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ON SOME COCCINELLIDAE (COLEOPTERA) FROM NEWFOUNDLAND AND NOVA SCOTIA.

BY EDWARD A. CHAPIN

Museum of Comparative Zoology, Harvard University

In 1949 and 1951, Dr. Carl H. Lindroth, of the University of Lund, Sweden, and party made extensive collections of insects in Newfoundland, with some attention paid to Nova Scotia and Miquelon. The writer has been privileged to examine the lady-beetles collected by the members of the two expeditions, which were made possible by grants from the Arctic Institute of North America and the University of Helsinki, Finland. A total of 348 specimens, representing 19 species, one of which appears to be new to science, was taken. The first set of specimens is deposited in the Helsinki University museum, the second (including the unique type of the new species) in the Canadian National Collection. Other specimens are in the collections of the United States National Museum, the Museum of Comparative Zoology and the writer. A list of the species taken, with localities, dates, collector's initials and station numbers, is given at the end of this paper. The collectors were C. H. Lindroth and E. Palmen. The following species seem worthy of special comment.

Coccinella undecimpunctata L. Known from various stations along the Atlantic coast from Massachusetts northward. At this time it seems best to correct the record of this species from Alaska. Dobzhansky, in his revision of North American Coccinella[1] reported two specimens from Alaska as belonging doubtfully to this species. Dissection of one of them, a male, showed them to be *C. difficilis* Crotch. Therefore, at present, the known distribution of *C. undecimpunctata* L. in North America is along the Atlantic coast from Massachusetts to Newfoundland and the distribution of *C. difficilis* Cr. is from Colorado, Utah and Nevada north to a point 60-75 miles north of Rampart House, Alaska.

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[1] U.S. Nat. Mus., Proc., Vol. 80, Art. 4, p. 28, 1931.

Microweisea misella (Leconte). A single specimen, which I refer to this species, differs from the type in that the punctation of the elytra seems to be slightly coarser. This apparent difference could be due to the difference in age of the specimens, the Newfoundland specimen being fresher and cleaner than the Leconte type. Otherwise, no differences could be noted.

Hyperaspis novascotiae n. sp.

A single specimen from Nova Scotia appears to be undescribed and is characterized as follows. —

Female: form very broadly oval, similar to that of *H. lugubris* (Rand.), piceous black, with head, lateral margins of pronotum narrowly, and four spots on each elytron, yellowish brown. Head and pronotum finely and moderately densely punctured, very finely alutaceous between punctures, pronotum finely margined across base. Scutellum extremely finely and sparsely punctured. Elytra much more coarsely punctured than pronotum except on extreme flanks where the punctures are fine and sparse. Each elytron decorated with four spots — a triangular spot on the humerus which fails narrowly to reach the base but which reaches the marginal bead; a lateral spot, almost semicircular, at the beginning of the posterior half of the length of the elytron, its outer margin following the marginal bead; an apical spot, slightly larger than the lateral spot and evenly elliptical, failing to reach the apical angle by a little less than its long diameter but following the marginal bead; a discal spot, similar in size to the lateral spot and located slightly apicad of the lateral spot, so that the lateral and discal spots together form a row across the elytra which is slightly curved with the convexity toward the apices. Under parts dark except epipleura of thorax and elytra; anterior and middle legs, posterior coxae, tips of femora, tibiae and tarsi pale. Metacoxal arcs on first visible sternite semicircular, nearly touching posterior margin of sternite. Metasternum and abdominal sternites coarsely punctured laterally, finely and sparsely punctured along median line. *Dimensions*: length 2.3 mm., width 1.8 mm.

Male: unknown.

Type locality and known distribution: Nova Scotia, Bridgewater, Crescent Beach. Type and only specimen collected May 19, 1951 by C. H. Lindroth (CHL 179). Deposited in the Canadian National Collection.

At first glance this species appears to be *H. undulata* (Say) with the discal spots displaced apicad on the elytra. However, its form and other characteristics seem to ally it with *H. lugubris* (Rand.).

List of species, with localities.

Hippodamia tredecimpunctata tibialis (Say). 119 specimens.

Newfoundland: *Northeast.* Springdale, 20-21.VI.51 (CHL 254); Twillinggate, 5 and 8.VII.51 (CHL 276,280). *East.* Gambo, 25-26.VIII.49 (CHL 160,161,163); Terra Nova, 28.VII.51 (CHL 328). *South.* Rencontre West, 17-20.VI.49 (CHL 36); Terrenceville, 13-14.VIII.51 (CHL 357). *West.* Deer Lake, 18.VIII.49 (CHL 148); Deer Lake, 1-2.VI.51 (CHL 212,213,215); South Branch, 4.VII.49 (EP 109); Cooks Bk., Curling, 15.VIII.49 (EP 242). *Northwest.* St. Pauls, 10.VIII.49 (CHL 134); Cow Head, 7.VIII.49 (CHL 130); Cow Head, 9.VIII.49 (EP 216); Daniels Harbour, 23.VII.49 (EP 169). *Central.* Gander, 2.VI.49 (EP 3); Buchans Junction, 15.VI.51 (CHL 240); Badger, 22-25.VI.51 (CHL 256,257,258,259); Grand Falls, 26.VII.51 (CHL 324).

Nova Scotia: Baddeck, 24.V.51 (CHL 190); North Sydney, 27.V.51 (CHL 200).

Anisosticta bitriangularis (Say). 21 specimens.

Nova Scotia: Halifax, 18.V.51 (CHL 177); Halifax, Waverley, 21.V.51 (CHL 184); Baddeck, 24.V.51 (CHL 189,190); Cheticamp, 25.V.51 (CHL 191); North Sydney, 27.V.51 (CHL 200,201).

Coccinella transversoguttata Fald. 82 specimens.

Newfoundland: *Northeast.* Hampden, 12.VII.49, 24.VII.51 (CHL 87,316,317); Springdale, 20-21.VI.51 (CHL 254); Fogo, Tilting, 30.VI.51 (CHL 268). *East.* Terra Nova, 26-28.VII.51 (CHL 327,328); Port Rexton, 30-31.VII.51 (CHL 332,333). *Southeast.* Holyrood, 10.VI.49 (CHL 23). *South.* Rencontre West, 15-20.VI.49 (CHL 32,36,40); St. Albans, 26.VI.49 (CHL 51); Garnish, 6.VIII.51 (CHL

349); Terrenceville, 13-14.VIII.51 (CHL 356). *West.* Deer Lake, 2.VI.51, 25.VII.51 (CHL 215,320,321); Lomond, Bonne Bay, 14.VII.49 (EP 149). *Northwest.* St. John I., St. John Bay, 3.VIII.49 (EP 195). *Central.* Millertown Junction, 22.VIII.49 (CHL 152); Glenwood, 23.VIII.49 (CHL 158); Gander, 1.IX.49 (CHL 173, EP 307); Lake St. John, 27.VII.51 (CHL 325).

Nova Scotia: Halifax, 21.V.51 (CHL 183); Cape North, 26.V.51 (CHL 198); North Sydney, 27.V.51 (CHL 199).

Miquelon. 8-10.VIII.51 (CHL 351).

Coccinella trifasciata L. 29 specimens.

Newfoundland: *Northeast.* Springdale, 20-21.VI.51 (CHL 252,253,254); Fogo, Tilting, 30.VI.51 (CHL 268); Norris Arm, 23.VIII.49 (EP 278). *South.* Rencontre West, 17-20.VI.49 (CHL 36). *West.* Stephenville Cross, 5-8.VII.49 (CHL 69); Deer Lake, South Brook, 3.VI.51 (CHL 219). *Central.* Millertown Junction, 22.VIII.49 (CHL 152); Victoria Lake, 11-12.VI.51 (CHL 237); Buchan Junction, 15.VI.51 (CHL 240).

Nova Scotia: Halifax, 21.V.51 (CHL 183); Orangedale, 28.V.51 (CHL 202).

Coccinella undecimpunctata L. 39 specimens.

Newfoundland: *Northeast.* Fogo, Tilting, 30.VI.51 (CHL 269); Twillinggate, 5.VII.51 (CHL 276). *South.* Grand Bank, 3.VIII.51 (CHL 345). *West.* Piccadilly, Port au Port Peninsula, 7.VII.49 (EP 117). *Northwest.* Cow Head, 7-13.VIII.49 (CHL 128,135); St. Pauls, 10.VIII.49 (CHL 134).

Nova Scotia: Halifax, 18.V.51 (CHL 178).

Miquelon. 8.VIII.51 (CHL 352).

Anisocalvia quattuordecimguttata (L.) 3 specimens.

Newfoundland: *West.* Deer Lake, 25.VII.51 (CHL 321); Deer Lake, South Brook, 3.VI.51 (CHL 217). *Central.* Glenwood, 23.VIII.49 (CHL 155).

Anisocalvia quattuordecimguttata duodecimmaculata (Gebl.) 4 specimens.

Newfoundland: *Northeast.* Fogo, Tilting, 30.VI.51 (CHL 268). *West.* Deer Lake, 30.V.51 (CHL 205); Deer Lake, 25.VII.51 (CHL 321).

Anatis ocellata (L.) 2 specimens.

Newfoundland: *South.* Port aux Basques, 1.VII.49 (CHL 61).

Nova Scotia: Bridgewater, Crescent Beach, 19.V.51 (CHL 179).

Adalia bipunctata (L.) 11 specimens.

Newfoundland: *West.* Cooks Bk., Curling, 15.VIII.49 (EP 242); Corner Brook, 15.VIII.49 (EP 247).

Nova Scotia: Halifax, 21.V.51 (CHL 183).

Adalia frigida (Schneider) 7 specimens.

Newfoundland: *Northeast.* Fogo, Tilting, 30.VI.51 (CHL 268). *West.* Stephensville Crossing, Harry's River, 5-6.VII.49 (CHL 70, EP 112); Steady Brook, Humber, 10.VII.49 (EP 136); Spruce Brook, 8-9.VII.49 (EP 125); Deer Lake, 31.V.51 (CHL 211).

Mulsantina hudsonica (Casey) 9 specimens.

Nova Scotia: Bridgewater, Crescent Beach, 19.V.51 (CHL 179).

Psyllobora vigintimaculata (Say) 10 specimens.

Newfoundland: *West.* Spruce Brook, 8-9.VII.49 (EP 125); Glenburnie, Bonne Bay, 19.VII.49 (EP 165).

Microweisea misella (Lec.) 1 specimen.

Newfoundland: *West.* Deer Lake, 31.V.51 (CHL 210).

Hyperaspis undulata (Say) 1 specimen.

Nova Scotia: Orangedale, 28.V.51 (CHL 202).

Hyperaspis novascotiae n.sp. 1 specimen.

Nova Scotia: Bridgewater, Crescent Beach, 19.V.51 (CHL 179).

Hyperaspis moerens (Lec.) 1 specimen.

Newfoundland: *Northwest.* Cooks Harbour, 16.VII.49 (CHL 97).

Scymnus (*Pullus*) *haemorrhous* Lec. 2 specimens.

Newfoundland: *Northeast.* Twillinggate, 4-8.VII.51 (CHL 277).

Nova Scotia: Halifax, Sackville, 20.V.51 (CHL 181).

Scymnus (*Nephus*) *ornatus* Lec. 5 specimens.

Newfoundland: *Northwest.* Cooks Harbour, 16.VII.49 (CHL 96,97); St. Pauls, 10.VIII.49 (CHL 134).

Scymnus (*Nephus*) *flavifrons* (Melsh.) 1 specimen.

Newfoundland: *Central.* Gaff Topsail, 19-20.VIII.49 (CHL 149).

MAGICICADA SEPTEMDECIM LINN., BROOD XI, IN CONNECTICUT (HEMIPTERA: CICADIDAE)

By J. A. Manter

Storrs, Connecticut

Brood XI of the periodical cicada made its scheduled appearance above ground during June 1954 in Connecticut. Only broods II and XI of this cicada occur in Connecticut. Brood XI in the past has been reported from scattered areas of Connecticut, Massachusetts, and Rhode Island but with only scanty records in recent years. Mr. George Dimmock observed the species in Suffield, Connecticut, in 1869 but could not find any 51 years later while visiting the same locality. The Hartford Courant, June 6, 1903, printed a letter from a correspondent describing the reappearance of "locusts" in a forest where "vast numbers" were seen in 1886 near the town of Willington. He wrote "The forest seems alive with this wonderful insect." A few local residents of the region recall hearing the cicadas in 1920, but entomologists apparently did not know of this colony and had no records of the Suffield colony since 1869.

In Massachusetts and Rhode Island Brood XI has apparently disappeared forever. Dr. Dow writes in the Bulletin of the New England Museum of Natural History, April, 1937, "though Dr. C. W. Johnson (1920) visited the locality in Rhode Island from which it was reported by Prof. A. S. Packard in 1903, he failed to discover any evidence that the cicadas had emerged." In the July number of the Bulletin, Dr. Dow reported, "The three localities in Rhode Island which had been recorded by Professor Packard in 1903 were visited by Dr. C. H. Blake and the writer on June 12, 1937. We failed to hear any cicadas or find any trace of them, and were likewise disappointed on the following day, in Suffield, Connecticut, though a map drawn by Mr. Dimmock guided us to the exact site of the former colony." From these unsuccessful attempts to locate colonies it seemed probable that brood XI had become extinct.

On June 16, 1937, Dr. W. E. Britton informed Dr. Dow that the writer had reported the emergence of the periodical cicada in East Willington, Connecticut. Dr. Dow visited the colony with the writer on June 20, and reported his observations in the Bulletin, July, 1937. The writer prepared a short article for the 37th Report of the Connecticut State Entomologist, Bul. 408, May, 1938.

From the records available it seemed probable that the East Willington colony was the last in existence of brood XI. So it was with great interest that I made several visits in 1954 to the site of the 1937 colony on the farm of Mrs. Mary Blahusiak. The area has remained in pasture and there appears to have been no great change in conditions, although it has been kept partially free of brush by the feeding of the pastured animals.

The first cicadas were found on June 10, 1954, in the same pasture area as observed in 1937. Several later visits were made until the cicadas disappeared. At no time did their numbers approach those of 1937. From casual observations it seems that the colony has been greatly reduced in individuals, although it extended over about the same area as in 1937.

During a visit later in the summer no evidence of egg laying or of subsequent wilting of twigs was found. This was quite surprising since the injured twigs caused by egg punctures were so very conspicuous in 1937. These observations lead to the conclusion that brood XI is approaching extinction and one wonders how many more times this remarkable species will make its reappearance in East Willington, Connecticut.